

We claim:

1. A method of using a dispersed fluid for interfacial assembly, said method comprising:
providing a first fluid component having a nanoparticulate therein;
dispersing a second fluid component with said first fluid component, said first and second fluid components at least partially immiscible one with the other, said immiscibility defining a fluid component interface; and
interfacially contacting said nanoparticulate with said second fluid component.
2. The method of claim 1 wherein said nanoparticulate comprises a substrate and a ligand component.
3. The method of claim 2 wherein said substrate is selected from a metal, a metal alloy, a metal oxide, a metal selenide, a metal sulfide and a combination thereof.
4. The method of claim 2 wherein said ligand component comprises a hydrophobic moiety.
5. The method of claim 4 wherein said ligand comprises a reactive functionality.
6. The method of claim 5 wherein said second fluid component comprises a reagent reactive with the said functionality, and said method further comprises reacting said reagent with said functionality.
7. The method of claim 6 wherein said ligand comprises a vinylbenzene and said reagent is a free radical initiator.
8. The method of claim 6 wherein said ligand comprises a carboxylate and said reagent is selected from a polyfunctional amine and a polyfunctional alcohol.
9. The method of claim 5 wherein said first fluid component further comprises a second nanoparticulate, said second particulate comprising a substrate and a ligand component, said ligand component absent a reactive functionality.

10. The method of claim 9 wherein said second fluid component comprises a reagent reactive with said functionality, reacting said reagent with said functionality and removing said second nanoparticulate from said ligand-reagent reaction product.

11. The method of claim 6 wherein said ligand-reagent reaction product comprises a capsule about said second fluid component.

12. The method of claim 11 wherein said second fluid component further comprises a therapeutic agent.

13. The method of claim 4 wherein said second fluid component is aqueous and comprises a hydrophilic ligand.

14. The method of claim 13 wherein at least one of said nanoparticulate ligand and said hydrophilic ligand comprises a reactive functionality.

15. The method of claim 4 wherein said first fluid component comprises a polymer-solvent solution and said second fluid component comprises condensed atmospheric moisture, said condensate dispersed in an array on said solution surface.

16. The method of claim 15 further comprising removal of said second fluid component.

17. The method of claim 1 further comprising introduction of a second nanoparticulate to said first fluid component, said second particulate having a diametral dimension greater than said first particulate.

18. A system for interfacial nanoparticulate assembly, said system comprising:

a first fluid component;

a second fluid component dispersed by said first fluid component, said first and second fluid components at least partially immiscible one with the other, said immiscibility defining a fluid component interface; and

nanoparticulates assembled at said fluid component interface, at least one of said nanoparticulates comprising a substrate and a ligand component.

19. The system of claim 18 wherein said substrate is selected from a metal, a metal alloy, a metal oxide, a metal selenide, a metal sulfide and a combination thereof.

20. The system of claim 18 wherein said ligand component comprises a hydrophobic moiety.

21. The system of claim 20 wherein said moiety is selected from pyridine, tri-*n*-octylphosphine, vinylbenzene and a combination thereof.

22. The system of claim 18 wherein second fluid component comprises a reagent reactive with said ligand component.

23. The system of claim 22 wherein said ligand component comprises a vinylbenzene and said reagent is a free radical initiator.

24. The system of claim 22 wherein said ligand comprises a carboxylate and said reagent is selected from a polyfunctional amine and a polyfunctional alcohol.

25. The system of claim 18 wherein said first fluid component is hydrophobic, said second fluid component is aqueous and dispersed in said first fluid component, and said assembled nanoparticulates comprise a substantially spherical capsule at said fluid component interface.

26. The system of claim 25 wherein said assembled nanoparticulates encapsulate said second fluid component upon removal of said first fluid component.

27. The system of claim 25 wherein said second fluid component further comprises a therapeutic agent.

28. The system of claim 25 wherein said second fluid component is aqueous and comprises a hydrophilic ligand.

29. The system of claim 28 wherein at least one of said nanoparticulate ligand and said hydrophilic ligand comprises a reactive functionality.

30. The system of claim 18 wherein said first fluid component comprises a polymer-solvent solution and said second fluid component

comprises condensed atmospheric moisture, said condensate dispersed in an array on said solution surface.

31. The system of claim 30 wherein said assembled nanoparticulates define a cavity in said first fluid component upon removal of said second fluid component.

32. The system of claim 18 wherein said nanoparticulates comprise first and second nanoparticulates, said first nanoparticulates diametrically dimensioned less than said second nanoparticulates.